

**PROPOSED ADDITION
TO THE
CALIFORNIA CODE OF REGULATIONS
BY THE
CALIFORNIA DEPARTMENT OF WATER RESOURCES**

**TITLE 23 WATERS
DIVISION 2 DEPARTMENT OF WATER RESOURCES
CHAPTER 7 WATER AUDITS AND WATER LOSS CONTROL REPORTING**

INITIAL STATEMENT OF REASONS

FEBRUARY 2017

STATE OF CALIFORNIA

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Initial Statement of Reasons

PROBLEM STATEMENT

The Legislature adopted Senate Bill 555 because it found that water conservation on the supply-side of the state's larger urban retail water suppliers (urban water suppliers) may be improved by performing validated water loss audits on their water systems. Accordingly, Senate Bill 555 added Section 10608.34 to the California Water Code, requiring the Department of Water Resources (Department) to establish rules for conducting and validating water loss audits, technical qualifications for persons performing water loss audit validation, and reporting requirements for submitting validated water loss audits to the Department.

BENEFITS

These regulations will assist urban water suppliers with supply-side water conservation in a standardized but reliable manner through validated water loss audits. Identifying supply side conservation measures through effective water loss audits and evaluating the data used in the audits through validation will help urban retail water suppliers better utilize their water resources.

The proposed regulations are intended to help urban water supplier's quantify water losses due to unbilled use (apparent losses) and leaks (real losses) in their systems. The proposed regulations are expected to result in reduced water losses by increasing the supplier's level of attention to the how and where the losses occur. Many urban water suppliers do not know the extent of water lost in their systems because they do not perform regular water loss audits. If water audits are not conducted, it is difficult for a water agency to know the extent or source of its losses and unlikely that the agency will implement practices to reduce these losses.

Proponents of water loss audits point to a 2011 study prepared for the California Public Utilities Commission Energy Division titled "Embedded Energy in Water Pilot Programs Impact Evaluation." In that study, it was found that the leakage rate of the evaluated water suppliers ranged from 10 million gallons per year to 33 million gallons per year.

The proposed regulations will assist urban water suppliers with future water planning because validated water loss audits provide reliable information for planning. The regulations require water suppliers to validate water loss audits prior to submitting them to the Department. In addition, the rules specify certification requirements for professionals that conduct the validation of water loss audits.

A few other states, most notably Georgia, have taken similar steps towards supply-side conservation, showing the importance of validating water loss audits. In June of 2010, the Georgia Water Stewardship Act (the Act) was signed into law. Georgia now has several years of experience demonstrating the value of validated water loss audits to

future planning. Future planning, they found, must be based on accurate and reliable audit results in order to be effective. Validation of water loss audits is the best method to assure reliable audit results.

With increasing population and scarcer water supplies, this regulatory action will reduce distribution system losses and increase urban water efficiency. We propose these regulations to assist urban water suppliers with supply-side conservation in a standard but reliable manner through validated water loss audits.

SPECIFIC PURPOSE AND NECESSITY OF THE PROPOSED REGULATION

Section 700.0: describes the mandate for and scope of the proposed regulations answering the question “Why is the regulation required?”

Section 700.1: includes sixteen definitions to ensure regulatory consistency and clarity. These terms have specific meaning for the purposes of this Chapter.

- (a) “Apparent Water Loss” is defined because it is a term that is unique to these regulations.
- (b) “AWWA” is defined in these regulations to ensure clarity with this industry acronym.
- (c) “CA-NV AWWA” is defined in these regulations to ensure clarity with this industry acronym.
- (d) “Data Validity Score (DVS)” is defined because not all people reading these regulations may be familiar with this term and where it is used.
- (e) “Department” is included to ensure clarity.
- (f) “Infrastructure Leakage Index” is defined because it is a term that is unique to these regulations.
- (g) “Level 1 validation” is needed because there are different levels of water loss audit validations. It is also included because it is a term that is unique to these regulations.
- (h) “Non-revenue water” is defined because it is a term that is unique to these regulations.
- (i) “Real losses” is defined because it is a term that is unique to these regulations.
- (j) “Report” is defined in these regulations to ensure the regulations clearly define what is meant by the term.
- (k) “Standardized water loss audits” is defined because this term has unique meaning for these regulations.
- (l) “Urban retail water supplier” is defined because not all people reading these regulations may be familiar with this term.

(m) “Validating” is defined because not all people reading these regulations may be familiar with this term and that it is a term that is unique to these regulations.

(n) “Water audit validation” is defined because it is a term that is unique to these regulations.

(o) “Water Audit Validator” is defined because it is a term that is unique to these regulations.

Section 700.2 is a prescriptive standard that specifies use of standard industry practice when conducting audits. Section 10608.34(a)(1)(A) of the California Water Code mandates the use of this standard. As such, all audits shall be conducted in accordance with the Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs, 4th Edition (also referred to as “the Manual”) and its associated software, *Free Water Audit Software*, version 5.0. This document and related software are incorporated by reference because the statute specifies their use. In addition, the information contained in the incorporated documents is extensive and would be too cumbersome to include in its entirety. The software too, is required by the above statute and is not practical for inclusion in written format. More recent versions of the document are being used because the statute is explicit in requiring that the most recent versions be used as a basis for these regulations.

Sections 700.3(a) requires that audits receive validation in accordance with the procedural requirements contained in Section 10608.34(a)(1)(B) of the California Water Code. It is a prescriptive standard that specifies a Level 1 validation because it is consistent with current industry standards and the principles of the Manual, as required by this section of the Water Code. Audit validation is included because one of the major tenets of a water loss audit validation is the evaluation of the data quality used in performing the audit. A Level 1 audit validation is the current minimum first step in evaluating water loss and there are currently no other alternatives in the industry at this time. Data quality evaluation is essential to meeting the intent of the requirements contained in Section 10608.34(a)(1)(B) of the California Water Code and promotes the statutory goal to conserve water.

Section 700.3(b) requires a minimum standard for a Level 1 validation to ensure that industry standards and principles of the Manual are met. It is included because the industry has developed a very concise expectation for audit validation. Audit data validity is highly dependent upon business practices followed by water system personnel. Implementation of those business practices occurs at the staff/team level, hence the need for utility staff interviews. Reviews of data quality, source documents, and performance indicators are also an important attribute for audit validations so that the audit validation step meets the intent of the requirements contained in Section 10608.34(a)(1)(B) of the California Water Code. A final report requirement is included in the regulations. Complete documentation and a write-up of the audit validation is important so that the department, public at large, and the State Water Resources Control Board can better understand the water loss of the respective water utility.

Section 700.4(a) establishes the qualifications of a water audit validator during the time period when the AWWA is formulating their certificate program. It is included to meet the requirement of Section 10608.34(a)(1)(C) of the California Water Code to specify

the technical qualifications required to become certified as a water audit validator. The criterion to use the CA-NV AWWA Water Loss Technical Assistance Program is allowed in statute (Section 10608.34(b) of the California Water Code). The draft regulations specify the performance of thirty (30) Level 1 audit validations that are consistent with the Water Research Foundation Standard 4639 as the minimum level of experience for somebody qualified to conduct audit validations. This number of validation is selected because industry stakeholders have recommended that amount experience, based from their program experience and knowledge.

Section 700.4(b) establishes the qualifications of a water audit validator for the time period after the AWWA has formulated its certificate program. It is included to meet the requirements contained in Section 10608.34(a)(1)(C) of the California Water Code. The CA-NV AWWA is an appropriate body to establish such an industry-specific certification program because of its expertise in establishing industry-specific certificate programs. The regulations establish July 1, 2019 as the deadline for the CA-NV AWWA to establish its certificate program because it could take as long as two years to develop the program. However, it is expected to take less time (about a year and a couple months).

Section 700.4(c) allows an urban retail water supplier to perform validations on its own audits. It is included to meet the requirements contained in Section 10608.34(a)(1)(D) of the California Water Code. Water utilities perform other self-assessments on their systems as a standard of practice, such as water quality monitoring and reporting. Department staff believes that water utilities performing their own audits in accordance with Section 700.4(d) can conduct unbiased validations.

Section 700.4(d) precludes water audit validators from performing validation on audits that they help prepare. It is included to ensure that audit validations are viewed by a water audit validator who is capable of evaluating the audit without bias. In particular professionals performing audit validations may not be a member of the team that performed the audit.

Section 700.5(a) establishes validated water loss audit reporting submission requirements and the allowable time period for when these audits may be performed. These are included to meet the requirements of Section 10608.34(b) of the California Water Code. The stakeholders involved in assisting the Department indicated that use of either the calendar year (beginning in January) or the water supplier's fiscal year would allow urban water suppliers the latitude to perform audits when it is most beneficial to them in order to maximize water conservation goals. The overall intent is to have the urban retail water suppliers perform audits when it is most beneficial to them.

Section 700.5(b) requires that an audit submitted includes sufficient information for the department to understand the audit and the utility's operations to meet to meet the requirements of Section 10608.34(f) and 10608.34(g) of the California Water Code. It addresses requirements for the Department to review water loss audits for completeness and adequacy. The regulations require a Data Validity Score, completion of all data fields, and separate audits for water suppliers with two or more separate public water systems. These processes make the Reports more valuable to the water

supplier and the public. Certification requirements for the report are required to ensure that a responsible professional is taking responsibility for the Report.

Section 700.5(c) is included to meet the requirements contained in Section 10608.34(d) of the California Water Code for electronic submission of reports.

Section 700.5(d) is included to meet the requirements contained in Section 10608.34(d) of the California Water Code for online access to submittal tools.

Section 700.6(a) describes what constitutes a complete submitted audit report. It is included to meet the requirements contained in Section 10608.34(f) of the California Water Code for a completeness review and evaluation by the Department.

Section 700.6(a)(1) specifies that audit reports must be complete and will be reviewed for meeting validation requirements. It is included to meet the requirements contained in Section 10608.34(f) of the California Water Code addressing validation of the water loss audits.

Section 700.6(a)(2) explains how the department will determine if a report shows congruency with known water system operations. This is included to meet the requirements contained in Section 10608.34(f) of the California Water Code that department identify reports that are incongruent with water system operations.

Section 700.6(a)(2)(A.) lists a prescriptive value for use as acceptance criteria. It is included because negative real losses are technically impossible and indicates a possible problem with their operations.

Section 700.6(a)(2)(B.) lists a prescriptive value for use as acceptance criteria. It is included because a cost of non-revenue water that is greater than 100% indicates that the utility does not maintain financial solvency and indicates a possible problem with their operations.

Section 700.6(b) identifies the action and subsequent follow-up for audit reports deemed incomplete or inadequate. It is included to meet the requirements contained in Section 10608.34(f) of the California Water Code regarding the consequences of submitting an incomplete or inadequate audit report.

TECHNICAL REPORTS AND DOCUMENTS RELIED UPON

The Department relied on the following technical reports and documents in proposing this regulation:

1. American Water Works Association, Manual of Water Supply Practice – M36, Water Audits and Loss Control Programs, 6666 West Quincy Avenue, Denver, CO 80325-3098, 2016. (incorporated by reference)
2. American Water Works Association, Free Water Audit Software, version 5.0, 6666 West Quincy Avenue, Denver, CO 80325-3098 Copyright, 2014 (incorporated by reference)
3. M.Cubed, Economic and Fiscal Impact Analysis for Water Loss Audits and Water Loss Control Reporting Regulations Implementing Senate Bill 555 (revised), 5258 Miles Avenue, Oakland, CA 94618, revised by DWR in 2016.
4. ECONorthwest, Embedded Energy in Water Pilot Programs Impact Evaluation, Final Report, Prepared for the California Public Utilities Commission Energy Division, 222 SW Columbia Street, Suite 1600, Portland, Oregon, 97201, 2011.
5. Water Research Foundation, Level 1 Water Audit Validation Guidance Manual, WRF4639A, 6666 West Quincy Avenue, Denver, CO 80325-3098, 2016.
6. Natural Resources Defense Council, Water Audits & Water Loss Control for Drinking Water Utilities: Costs and Benefits, 40 West 20th Street, 11th floor, New York, NY 10011, 2015
7. Water Research Foundation and U.S. Environmental Protection Agency, Water Audits in the United States: A Review of Water Losses and Data Validity, 6666 West Quincy Avenue, Denver, CO 80325-3098. 2015
8. Lambert A.O., Ten Years Experience in Using the UARL Formula to Calculate Infrastructure Leakage Index; ILMSS Ltd., 3 Hillview Close, Hillview Road, Llanrhos, Llandudno, LL30 1SL United Kingdom. (undated)
9. Natural Resources Defense Council, Model State Legislation for Utility Water Loss Audits, Version 1.1, 40 West 20th Street, 11th floor, New York, NY 10011, 2016
10. California Department of Water Resources, California Water Plan Update 2013, Vol. 3, Ch. 3, Sacramento, CA, 2013.
http://www.water.ca.gov/waterplan/docs/cwpu2013/Final/Vol3_Ch03_UrbanWUE.pdf
11. State of Georgia, Stepping Up Water Loss Control, Lessons from the Guidance Brief, Center of Neighborhood Technology, www.cnt.org, February 2014.
12. Water Research Foundation, Utility Water Audit Validation: Principles and Programs, WRF4639B, 6666 West Quincy Avenue, Denver, CO 80325-3098, 2017.

MANDATE OF THE USE OF SPECIFIC TECHNOLOGIES

The proposed amendments do not mandate the use of specific technologies or equipment other than the Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs, 4th Edition, American Water Works Association, and the AWWA Water Loss Control Committee Free Water Audit Software v5.0 (2014). Both are required for inclusion in Section 10608.34 of the California Water Code. The AWWA M36 Guidance Manual is readily obtainable for \$150.00 and the AWWA software may be obtained free of charge.

ECONOMIC IMPACT ASSESSMENT

CREATION OR ELIMINATION OF JOBS

The proposed regulation is not expected to create or eliminate jobs. Urban retail water suppliers will be responsible for preparing and submitting annual validated water loss audit reports to the Department, and they are expected to rely on existing conservation and operations staff to perform the work.

CREATION OR ELIMINATION AND EXPANSION OF BUSINESSES

The proposed regulation is not expected to eliminate or expand businesses. Urban retail water suppliers will primarily rely on existing conservation and operations staff to comply with the proposed regulation. The level of effort necessary to comply with the regulation is expected to be absorbable by existing staff.

BENEFITS TO PUBLIC HEALTH AND PUBLIC PROPERTY

Public health and public property may receive some benefit from the proposed regulation because of more reasonable management and conservation of water supply. In performing the validated water loss audits, urban retail water suppliers will identify the areas of distribution system water losses and as a result may be address those losses.

DESCRIPTION OF COSTS AND BENEFITS OF PROPOSED REGULATION

This section qualitatively describes the fiscal and economic costs and economic benefits of the proposed regulation, the scope of the potential costs and benefits, and the costs to private interests, local governments, and state agencies.

Scope of Costs of the Proposed Regulation

The proposed regulation would require all urban retail water suppliers to annually prepare, validate, and submit standardized water loss audits to the Department. It would also require these suppliers to train staff or hire qualified consultants to conduct Level 1 validations of the water loss audits prior to submittal.

Pursuant to Water Code Section 10608.12(p), an urban retail water supplier is defined as a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail cost for municipal purposes. Presently, there are 410 urban retail water suppliers in California, of which 338 are local governmental entities and 72 are private sector investor-owned utilities regulated by the California Public Utilities Commission.

The proposed regulation, as required by Water Code Section 10698.34, requires that standardized water loss audits be conducted in accordance with the Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs, 4th Edition, American Water Works Association, and the AWWA Water Loss Control Committee Free Water Audit Software v5.0 (2014).

The staff time required to complete a standardized water loss audit varies depending on the size, age, and condition of the water distribution system. Utilities are classified into small, medium, and large categories. Small utilities are defined as serving a population less than 50,000. Medium utilities are defined as serving a population between 50,000 and 150,000. Large utilities are defined as serving a population greater than 150,000. Of the 410 urban retail water suppliers subject to the proposed regulation, 230 (56%) are classified as small utilities, 131 (32%) are classified as medium utilities, and 49 (12%) are classified as large utilities. The Department consulted with water loss audit experts to determine the expected staff time required to complete a standardized water audit for a representative utility in each size category. Based on these consultations, the expected staff time required to complete a standardized water loss audit is 3 person-days for small utilities, 4 person-days for medium utilities, and 5 person-days for large utilities.

The proposed regulation requires that prior to submittal to the Department, the standardized water loss audit receive, at minimum, a Level 1 validation, as defined within the body of the regulations themselves.

The staff time required to complete a Level 1 validation varies by size of distribution system. The Department consulted with water loss audit experts to determine the expected staff time required by water utility size. Based on these consultations, the expected staff time required to complete a Level 1 validation is 3.3 person-days for small utilities, 5.8 person-days for medium utilities, and 8.3 person-days for large utilities.

The proposed regulation requires that Level 1 validations be completed by a water audit validator. For audits conducted prior to June 30, 2019, the proposed regulation defines a water audit validator as an individual with a certificate as a water audit validator. During the same period, a professional currently working in the water loss audit field that has performed at least 30 water loss audit validations is also qualified to perform water loss audit validations. A contractor working in the CA-NV AWWA Water Loss Technical Assistance Program (“Water Loss TAP”) performing water loss audit training

and conducting audit validations is also allowed to validate water loss audits prior to June 30, 2019, as allowed by the statute. After June 30, 2019, the proposed regulation defines a water loss audit validator as an individual that possesses a certificate from the California-Nevada Section of the American Water Works Association as a water audit validator.

The Department reviewed past and current water loss audit training and certification programs offered by the California Urban Water Conservation Council, Alliance for Water Efficiency, and AWWA and consulted with water loss audit experts to determine the expected staff time required to receive training and certification in the performance and validation of water loss audits. The expected staff time for an individual receiving training and certification is two-person days.

Implementation of the proposed regulation will require the Department to develop and implement processes, schedules, and tools for receiving and evaluating validated water loss audits reports from urban retail water suppliers and to review, compile, analyze, and report on water loss audit data. Prior to June 30, 2019, it also will require the Department to provide training and technical assistance to urban retail water suppliers on preparing and validating water loss audits. The Department expects to undertake these activities with its existing staff and qualified contractors.

Gross versus Net Cost to Urban Retail Water Suppliers

Conducting water loss audits in accordance with Chapter 3 of the AWWA Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs is a water utility best practice endorsed by AWWA. Many urban retail water suppliers in California already undertake these audits on a regular basis. In such situations, the proposed regulation would potentially entail added cost for staff training and certification and submission of the water loss audit to the Department. It would not impose significant additional cost to complete a standardized water audit, because the utility is already undertaking this practice.

The economic and fiscal impact analysis of the proposed regulation is based on urban retail water suppliers' gross costs of compliance. It does not make adjustments in the cost estimates to account for urban retail water suppliers already completing standardized water loss audits as part of their operational best practices. In this regard, the analysis provides a conservative statement of the probable magnitude of the economic and fiscal impacts of the proposed regulation.

ANALYSIS AND EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT STATEWIDE ADVERSE ECONOMIC IMPACT DIRECTLY AFFECTING BUSINESS

The Department concludes that the proposed regulation will not have a significant statewide adverse economic impact directly on businesses. The regulations are legislatively mandated by Senate Bill 555 (October 2015). Direct costs related to the

proposed regulation fall on investor-owned utilities, local governments, and state agencies. The proposed regulation may indirectly result in costs to some private businesses through assessments, user fees, rates, or other mechanisms that urban retail water suppliers use to fund these activities. However, costs of the proposed regulation represent a tiny percentage of urban retail water suppliers' annual revenue requirements and will have a negligible impact on their cost of service. The potential benefits of the proposed regulation may partly or wholly offset these costs.

COSTS

In this section, the expected annual costs and fiscal impacts of the proposed regulation are quantified.

Unit Costs of Water Audit, Validation, and Training and Certification

The staff time required to complete and validate a standardized water loss audit varies depending on the size, age, and condition of an urban retail water supplier's water distribution system. The cost analysis uses unit costs that reflect the typical or average cost of these activities. Unit costs are differentiated for small, medium, and large utilities. The Department consulted with water loss audit experts to develop the unit costs for this analysis.

Water Loss Audit Unit Costs

The expected staff time required to complete a standardized water loss audit is 3 person-days for small utilities, 4 person-days for medium utilities, and 5 person-days for large utilities.

The unit cost of a person-day of labor is based on the average daily salary cost for the urban retail water supplier staff conducting the audit. The unit cost assumes that conservation program staff account for 60 percent and operations engineering staff account for 40 percent of the staff time expended to conduct the audit. Occupational employment statistics from the Bureau of Labor Statistics (BLS) on annual mean wage were used to estimate the expected annual salary cost for the two labor categories. The annual mean wage for civil engineers in local government is \$88,030. The annual mean wage for urban and regional planners in local government, which is used as a proxy for conservation program staff positions, is \$69,330. The weighted average salary cost for these two positions is \$76,810. The BLS annual mean wage data do not include fringe benefit, overhead, and general and administrative (G&A) costs associated with these positions. Multipliers for these costs were applied to the salary cost to estimate the fully-loaded labor cost. The following multipliers were used in this calculation:

- Fringe: 35%
- Overhead: 25%
- G&A: 18%

The fully-loaded annual labor cost is \$136,722. The corresponding daily labor rate is \$525.85.

The water loss audit unit costs by utility size category are:

- Small: \$1,600
- Medium: \$2,100
- Large: \$2,600

Water Loss Audit Validation Unit Costs

The expected staff time required to validate a standardized water loss audit is 3.3 person-days for small utilities, 5.8 person-days for medium utilities, and 8.3 person-days for large utilities. Validation is assumed to be completed by the operations engineering staff. The fully-loaded annual labor cost is \$156,693. The corresponding daily labor rate is \$602.67.

The validation unit costs by utility size category are:

- Small: \$2,000
- Medium: \$3,500
- Large: \$5,000

Training and Certification Unit Cost

The Department reviewed past and current water loss audit training and certification programs offered by the California Urban Water Conservation Council, Alliance for Water Efficiency, the State of Georgia's program and AWWA and consulted with water loss audit experts to estimate the expected staff time required to receive training and certification in the performance and validation of water loss audits. The expected staff time for an individual receiving training and certification is two-person days.

The cost analysis assumes that, on average, one staff person each from the operations engineering and conservation groups of each urban retail water supplier receive training and certification each year. The daily labor rates for the engineering and conservation staff categories are \$602.67 and \$474.64, respectively. The unit cost for training and certification is \$2,200.

Summary of Unit Costs

Unit costs to conduct and validate water loss audits and to train staff by utility size category are summarized in Table 1.

Table 1. Summary of Unit Costs

Utility Size	Audit	Validation	Training	Total
Small	\$1,600	\$2,000	\$2,200	\$5,800
Medium	\$2,100	\$3,500	\$2,200	\$7,800
Large	\$2,600	\$5,000	\$2,200	\$9,800

Costs to Private Sector

Investor-Owned Utilities

There are 72 investor-owned urban retail water suppliers that would be subject to the proposed regulation. Of these 72 urban retail water suppliers, 39 are classified as

small, 24 are classified as medium, and 9 are classified as large. The annual cost of compliance with the proposed regulation is summarized in Table 2.

Table 2. Annual Cost of Proposed Regulation for Investor-Owned Utilities

Utility Size	No. of Utilities	Annual Cost per Utility	Total Annual Cost
Small	39	\$5,800	\$226,200
Medium	24	\$7,800	\$187,200
Large	9	\$9,800	\$88,200
Total	72		\$501,600

Private Individuals and Businesses

Direct costs related to the proposed regulation fall on investor-owned utilities regulated by the California Public Utilities Commission, local governments, and state agencies. The proposed regulation may indirectly result in costs to some private individuals and businesses through assessments, user fees, rates, or other mechanisms that urban retail water suppliers use to fund these activities. However, costs of the proposed regulation represent a tiny percentage of urban retail water suppliers' annual revenue requirements and will have a negligible impact on their cost of service. The potential benefits of the proposed regulation may partly or wholly offset these costs. While these impacts are real economic costs and benefits, without details of specific cost recovery mechanisms and changes to utility revenue requirements it is not possible to quantify them with respect to the impacts of the regulation.

Costs to Local Government

There are 338 local government urban retail water suppliers that would be subject to the proposed regulation. Of these 338 urban retail water suppliers, 191 are classified as small, 107 are classified as medium, and 40 are classified as large. The annual cost of compliance with the proposed regulation is summarized in Table 3.

Table 3. Annual Cost of Proposed Regulation for Investor-Owned Utilities

Utility Size	No. of Utilities	Annual Cost per Utility	Total Annual Cost
Small	191	\$5,800	\$1,107,800
Medium	107	\$7,800	\$834,600
Large	40	\$9,800	\$392,000
Total	338		\$2,334,400

Costs to State Agencies

Costs to the Department

Implementation of the proposed regulation will require the Department to develop and implement processes, schedules, and tools for receiving and evaluating validated water loss audits from urban retail water suppliers and to review, compile, analyze, and report on water loss audit data. These costs have been estimated by the Department as part of its annual budgeting process. In FY 2016-17, implementation costs of the proposed regulation are expected to be:

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- \$325,000 to support 1.0 senior engineer and 0.5 environmental scientist positions.
 - \$100,000 for outside contracts to assist with meeting facilitation and technical assistance in developing the rules and training programs.
 - \$75,000 to implement the online water audit submittal tool and database.

Estimated total implementation cost in FY 2016-17 is \$450,000.

In FY 2017-18 and annually thereafter, the Department estimates its implementation costs of the proposed regulation will be:

- \$250,000 to support 0.5 senior engineer and 1.0 environmental scientist positions.
- \$50,000 for outside contracts for technical assistance.
- \$50,000 for operation and maintenance of the online water audit submittal tool and database.

Estimated total implementation cost in FY 2017-18 and annually thereafter is \$350,000.

Costs to State Water Board

Section 10608.34(c) of the Water Code (SB 555) directs the State Water Board to use funds available in FY 2016-17 to “contribute up to four hundred thousand dollars (\$400,000) towards procuring water loss audit report validation assistance for urban retail water suppliers.” This is a one-time outlay. After June 30, 2019, training and certification of water audit validators will be undertaken by the California-Nevada Section of the American Water Works Association.

Summary of Estimated Costs

Table 4. Summarizes the estimated economic and fiscal impacts of the proposed regulation by fiscal year.

Table 4. Summary of Estimated Economic and Fiscal Impacts

Impact Category	FY 2016-17	FY 2017-18 and Annually Thereafter
Private Sector	\$501,600	\$501,600
Local Government	\$2,334,400	\$2,334,400
State Agencies	\$850,000	\$350,000
Total	\$3,686,000	\$3,186,000

Other Impacts of the Proposed Regulations

Non-Reimbursable State Mandate

Pursuant to Government Code 17556(d), the proposed regulation does not impose a reimbursable mandate on any local government urban retail water supplier because

they have existing authority to levy service charges, fees, or assessments sufficient to pay for the activities required by the proposed regulation.

Effect on Jobs

The proposed regulation will not result in a significant or permanent change in the number of jobs within the state. The additional local costs of conducting, validating, and submitting standardized water loss audits could be associated with a very minor increase in professional employment. Sectors affected would be consulting assistance from engineering and planning professionals (North American Industry Classification System [NAICS] sector 54, Professional, Scientific, and Technical Services) and local water utilities (NAICS sector 22131, Water Supply and Irrigation Systems). Mostly, however, urban retail water suppliers are expected to rely on existing conservation and operations staff to comply with the proposed regulation.

Effect on Housing

The proposed regulation will not affect the cost or availability of housing in the State. Potentially some local cost to comply with the regulation could be recovered through property-related taxes, assessments, or fees, but the cost recovery mechanisms would be localized and insignificant relative to existing housing costs.

Competitive Advantage of California Businesses

The proposed regulation will not result in significant adverse impacts directly or indirectly affecting California businesses. Direct costs related to the proposed regulation fall on investor-owned utilities regulated by the California Public Utilities Commission, local governments, and state agencies. The proposed regulation may indirectly result in costs to some private individuals and businesses through assessments, user fees, rates, or other mechanisms that urban retail water suppliers use to fund these activities. However, costs of the proposed regulation represent a tiny percentage of urban retail water suppliers' operating budgets and will have a negligible impact on their revenue requirements. The potential benefits of the proposed regulation may partly or wholly offset these costs. Additionally, more efficient, equitable, and sustainable transmission and distribution of the state's limited water resources are expected to provide long-term advantages to businesses and investments in the state.

Federal Funding

The proposed regulation will not affect any federal funding for the state.

ALTERNATIVES TO THE REGULATION

Pursuant to Government Code 11346.2, the rulemaking agency (the Department) is required to provide a description of reasonable alternatives to the regulation and the agency's reasons for rejecting those alternatives. Reasonable alternatives must ensure full compliance with the authorizing statute being implemented or made specific by the proposed regulation. However, an agency is not required to artificially construct alternatives or describe unreasonable alternatives.

In the case of this rulemaking, the authorizing legislation (SB 555, codified as Water Code Section 10608.34) requires the Department to establish rules for the conduct and validation of water loss audits by urban retail water suppliers based on the standards and principles of the Manual, and does not allow consideration of alternatives.

Because of these specific and prescriptive requirements, the Department was not able to identify reasonable alternatives to the proposed regulation that would ensure full compliance with the authorizing statute.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

The proposed regulation implements a new state requirement for the completion, validation, and reporting of standardized water loss audits by urban retail water suppliers. The regulation does not have a federal counterpart and does not impact, duplicate, or conflict with Federal regulations or statutes.